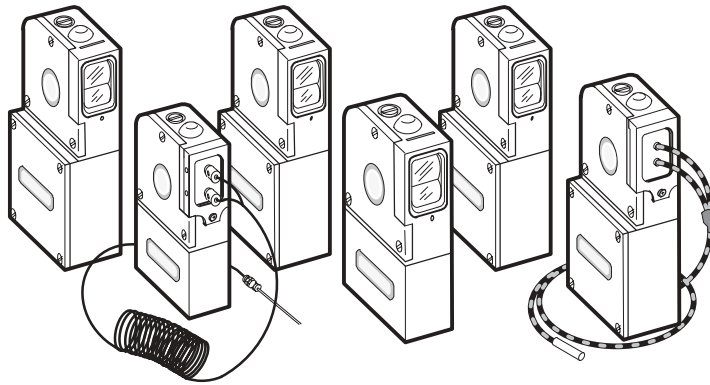


Series 5000

Analog Output



Description

This version of the Series 5000 photoelectric sensor provides the ideal solution for applications which require an output that is proportional to the position of the target being detected by the sensor. One example being the side to side position of paper moving over a roller.

The analog output signal from the sensor is switch selectable between current (mA) or voltage (V DC). Two independent setpoints may also be set to indicate a MIN/MAX condition.

Like all other Series 5000 sensors, the sensor consists of a power/terminal base and a separate photohead that houses the electronics. In the event that the head needs to be replaced, it can be done so without disturbing any wiring or realignment.

Two LED indicators are located on the top of the photohead provide a visual indication of the setpoint state. A single-turn sensitivity adjustment is provided on the top cover for use in the installation phase.

Features

- Modular package for increased flexibility
- Both analog and discrete outputs
- Selectable voltage or current analog signal
- Two adjustable setpoints with independent discrete outputs
- Wide variety of sensing modes
- Screw terminal or cable connections

General Specifications

Light Source	See Product Selection
Unit Protection	False pulse, output short circuit (analog only)
Supply Voltage	22-28V DC
Current Consumption	70mA maximum
Output Type	One selectable voltage or current analog output Two discrete setpoints (NPN)
Output Mode	Selectable positive or negative slope
Output Rating	Analog: 1-10V DC or 1-20mA Discrete: 100mA @ 30V DC
Response Time	100ms
Housing Material	Valox®
Lens Material	Acrylic (glass on polarized models)
LED Indicators	See User Interface on page 1-279
Connection Types	3m 300V cable, screw terminal
Supplied Accessories	None
Optional Accessories	Mounting brackets, reflectors, cordsets
Operating Environment	NEMA 3, 4, 12, 13 (IP66)
Vibration	10-55Hz, 1mm amplitude, Meets or exceeds IEC 60947-5-2
Shock	30g with 1ms pulse duration, Meets or exceeds IEC 60947-5-2
Operating Temperature	-40°C to +65°C (-40°F to +150°F) for EM relay -40°C to +52°C (-40°F to +125°F) for solid state
Relative Humidity	90% maximum
Approvals	UL listed, CSA certified, CE marked for all applicable directives

General Information

Wiring Diagrams page 1-279
Dimensions page 1-256

Sensing Modes

Retroreflective/
Standard Diffuse page 1-280
Retroreflective page 1-281
Standard Diffuse page 1-282
Infrared Glass Fiber Optic/Fixed
Focus/Wide Angle Diffuse page 1-283
Visible Red Plastic Fiber Optic/Fixed
Focus/Wide Angle Diffuse page 1-284

Accessories

Mounting Assemblies page 1-375
Right Angle Mirror Adaptor page 1-380
Protective Photoguard page 1-380
NEMA 7 and 9 Enclosure page 1-380
Reflectors, Reflective Tape page 1-386

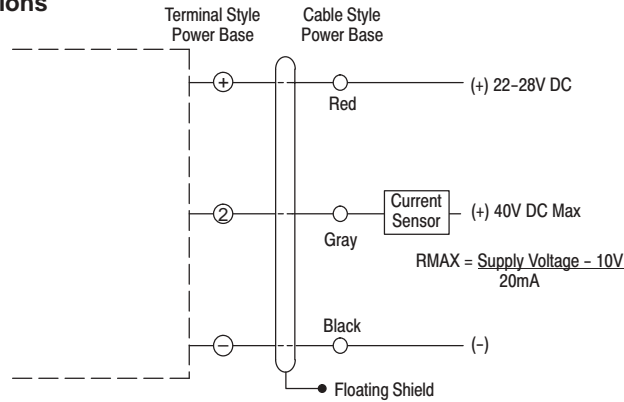
Allen-Bradley Spares

User Interface Panel

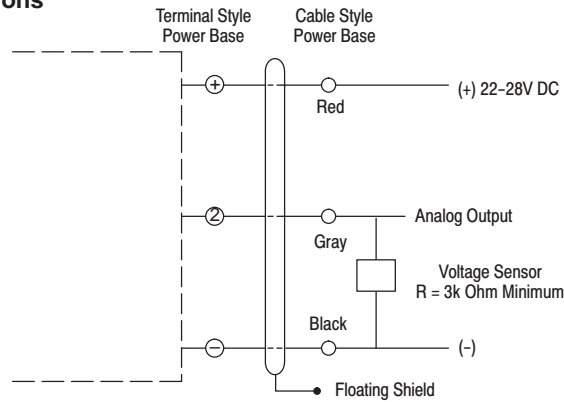
Label	Color	State	Status
Output	Red	OFF	Sensor output de-activated
		ON	Sensor output activated

Wiring Diagrams

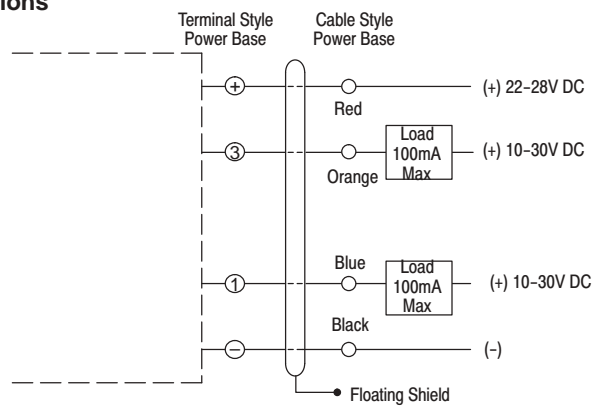
Analog Current Output Connections



Analog Voltage Output Connections



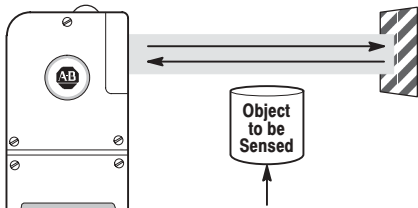
NPN Set Point Output Connections



Note: Details of connection of Allen-Bradley Series 5000 Photoelectric sensors to Allen-Bradley Programmable Controllers can be found in publication 42-2.0.

Series 5000 Retroreflective/Standard Diffuse

Analog Output



Typical Response Curve

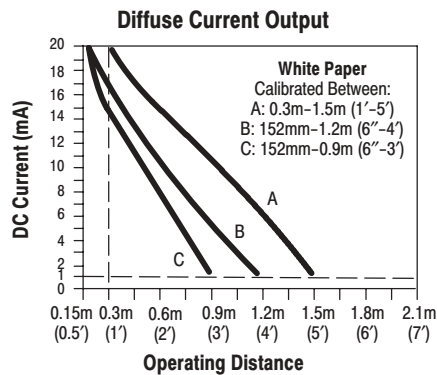
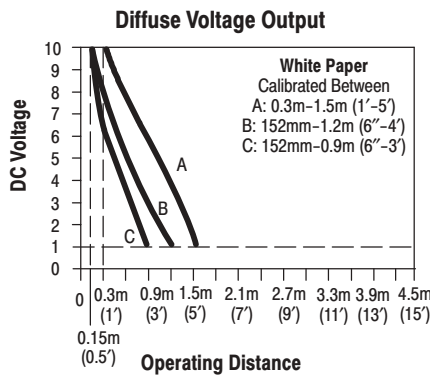
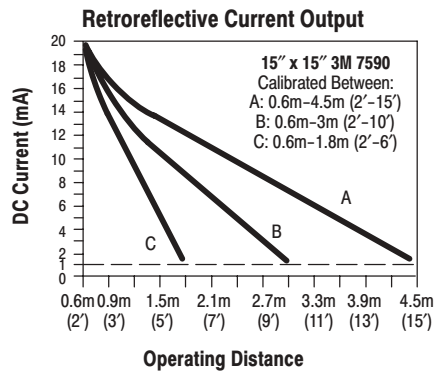
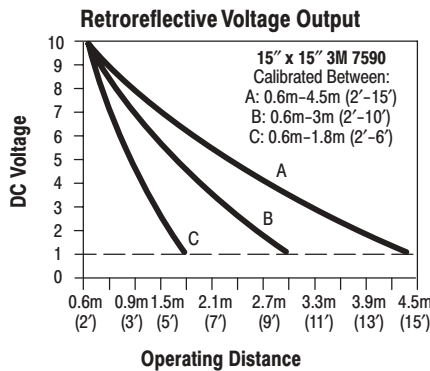
See response curve of the sensor for proper range of operation.

Specifications

Field of View	3°
Emitter LED	Infrared 880nm

QD Cordsets and Accessories

Description	Catalog/Page Number
Terminal Chambers	7-20
Screw Terminal	42MTB-5000
5-pin DC mini QD	42MTB-5000-QD5-1
Right Angle Bracket	60-1785
Conduit Adaptor 1/2in NPT	60-2213
Armoured Cable Adaptor	60-1577
76mm (3in) Diameter Reflector	92-39
32mm (1.25in) Diameter Reflector	92-47



Product Selection

1. Select Photohead.

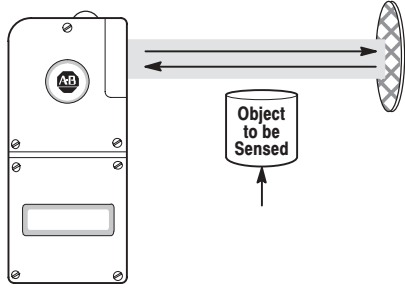
Supply Current	Sensing Distance	Analog Output	Discrete Output		Response TimeⓄ	Slope	Catalog Number
			Output Type Capacity	Max Leakage Current			
70mA	150mm (6in) to Total: Retro 15ft, Diffuse 5ft Linear: Retro 13ft, Diffuse 4ft	Voltage 1-10V DC Current 1-20mA	Two Adjustable Set Points NPN 100mA (30V Max)	10µA	100ms	Negative	42DRC-5400
				10µA			

Ⓞ Time needed for full analog swing.

2. Select Power Base (required).

Operating Voltage	Supply Current	Connection Type	Catalog Number
22 to 28V DC	70mA maximum	Screw Terminal	42DTB-5000
		3m 300V Cable	42DCB-5000

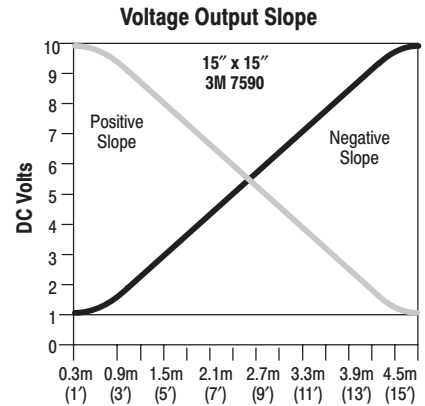
Allen-Bradley Spares



QD Cordsets and Accessories

Description	Catalog/Page Number
Terminal Chambers	7-20
Screw Terminal	42MTB-5000
5-pin DC mini QD	42MTB-5000-QD5-1
Right Angle Bracket	60-1785
Conduit Adaptor 1/2in NPT	60-2213
Armoured Cable Adaptor	60-1577
76mm (3in) Diameter Reflector	92-39
32mm (1.25in) Diameter Reflector	92-47

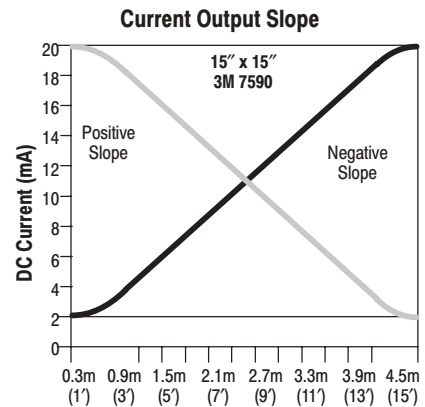
Typical Response Curve



Specifications

Field of View	3°
Emitter LED	Infrared 880nm

Operating Distance



Operating Distance

Product Selection

1. Select Photohead.

Supply Current	Sensing Distance	Analog Output	Discrete Output		Response Timeⓐ	Slope	Catalog Number
			Output Type Capacity	Max Leakage Current			
70mA	600mm (2ft) to Total: 4.6m (15ft) Linear 4.0m (13ft)	Voltage 1-10V DC	Two Adjustable Set Points NPN 100mA (30V Max)	10µA	100ms	Selectable Positive or Negative	42DRU-5400
		Current 1-20mA		10µA			

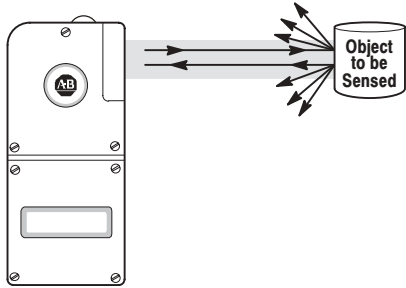
ⓐ Time needed for full analog swing.

2. Select Power Base (required).

Operating Voltage	Supply Current	Connection Type	Catalog Number
22 to 28V DC	70mA maximum	Screw Terminal	42DTB-5000
		3m 300V Cable	42DCB-5000

Series 5000 Standard Diffuse

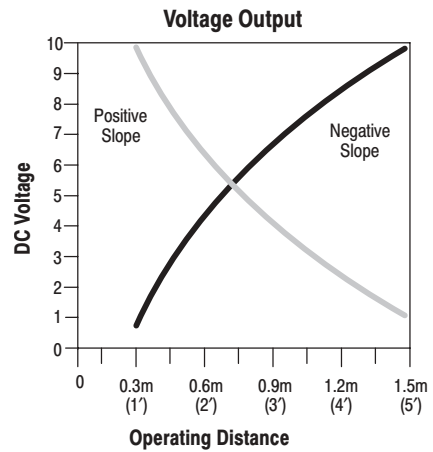
Analog Output



QD Cordsets and Accessories

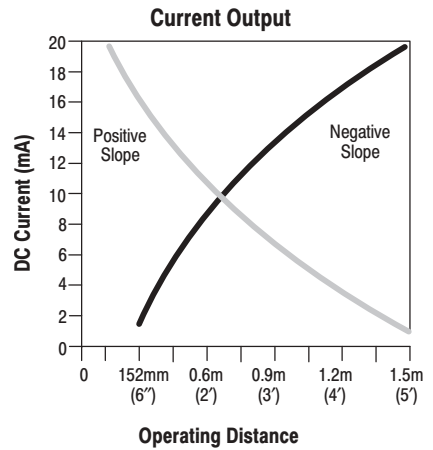
Description	Catalog/Page Number
Terminal Chambers	7-20
Screw Terminal	42MTB-5000
5-pin DC mini QD	42MTB-5000-QD5-1
Right Angle Bracket	60-1785
Conduit Adaptor 1/2in NPT	60-2213
Armoured Cable Adaptor	60-1577

Typical Response Curve



Specifications

Field of View	3°
Emitter LED	Infrared 880nm



Product Selection

1. Select Photohead.

Sensing Distance	Analog Output	Discrete Output		Response Time ^①	Slope	Catalog Number
		Output Type Capacity	Max Leakage Current			
150mm (6in) to Total: 1.5m (5ft) Linear: 1.2m (4ft)	Voltage 1-10V DC	Two Adjustable Set Points NPN 100mA (30V max)	10µA	100ms	Selectable Positive or Negative	42DRP-5400
	Current 1-20mA					

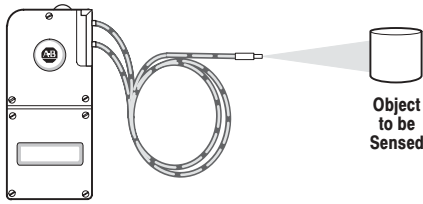
① Time needed for full analog swing.

2. Select Power Base (required).

Operating Voltage	Supply Current	Connection Type	Catalog Number
22 to 28V DC	70mA maximum	Screw Terminal	42DTB-5000
		3m 300V Cable	42DCB-5000

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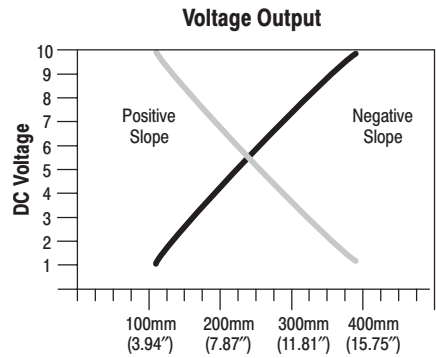
Series 5000 Infrared Glass Fiber Optic/Fixed Focus/Wide Angle Diffuse Analog Output



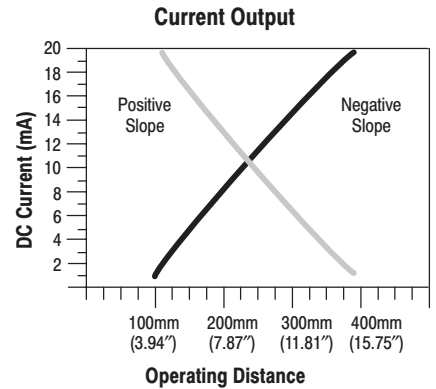
QD Cordsets and Accessories

Description	Catalog/Page Number
Terminal Chambers	7-20
Screw Terminal	42MTB-5000
5-pin DC mini QD	42MTB-5000-QD5-1
Right Angle Bracket	60-1785
Conduit Adaptor 1/2in NPT	60-2213
Armoured Cable Adaptor	60-1577

Typical Response Curve



Positive and Negative Slopes for Rectangular Tip Reflective Beam Fiber #99-36 and #99-37 with 32mm (1.25") Reflector



Specifications

Field of View	Depends on fiber optics (refer to fiber optic section) or lens type
Emitter LED	Infrared 880nm

Product Selection

1. Select Photohead.

Sensing Mode	Sensing Distance	Analog Output	Discrete Output		Response Time [ⓐ]	Slope	Catalog Number
			Output Type Capacity	Max Leakage Current			
Fiber Optic	Depends on Fiber Optic selected.	Voltage 1-10V DC Current 1-20mA	Two Adjustable Set Points NPN 100mA (30V max)	10µA	100ms	Selectable Positive or Negative	42DRA-5400FO
Fixed Focus	5.08 (0.2in) to 101mm (4in)						42DRA-5400FF
Wide Angle Diffuse	5.08 (0.2in) to 152mm (6in)						42DRA-5400WA

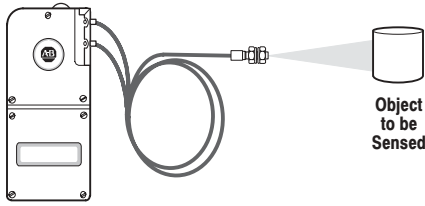
[ⓐ] Time needed for full analog swing.

2. Select Power Base (required).

Operating Voltage	Supply Current	Connection Type	Catalog Number
22 to 28V DC	70mA maximum	Screw Terminal	42DTB-5000
		3m 300V Cable	42DCB-5000

Series 5000 Visible Red Fiber Optic/Fixed Focus/Wide Angle Diffuse

Analog Output



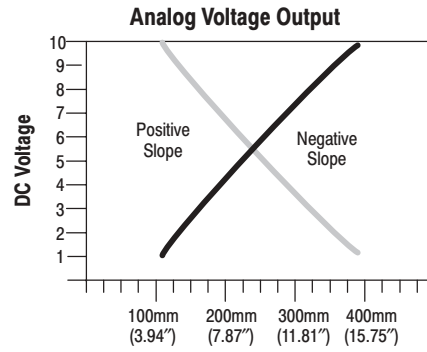
QD Cordsets and Accessories

Description	Catalog/Page Number
Terminal Chambers	7-20
Screw Terminal	42MTB-5000
5-pin DC mini QD	42MTB-5000-QD5-1
Right Angle Bracket	60-1785
Conduit Adaptor 1/2in NPT	60-2213
Armoured Cable Adaptor	60-1577

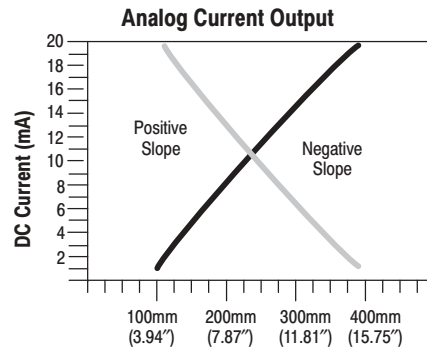
Specifications

Field of View	Depends on fiber optics or lens type selected.
Emitter LED	Visible Red 660nm

Typical Response Curve



Operating Distance
Positive and Negative Slopes for Reflective Beam Fiber #99-36 and #99-37 with 32mm (1.25") Reflector.



Operating Distance

Product Selection

1. Select Photohead.

Sensing Mode	Max Sensing Distance	Analog Output	Discrete Output		Response Time ^①	Slope	Catalog Number
			Output Type Capacity	Max Leakage Current			
Fiber Optic	Depends on fiber optic selected.	Voltage 1-10V DC Current 1-20mA	Two Adjustable Set Points NPN 100mA (30V Max)	10µA	100ms	Selectable Positive or Negative	42DRF-5400FO
Fixed Focus	5.08 (0.2in) to 101mm (4in)						42DRF-5400FF
Wide Angle Diffuse	5.08 (0.2in) to 152mm (6in)						42DRF-5400WA

^① Time needed for full analog swing.

2. Select Power Base (required).

Operating Voltage	Supply Current	Connection Type	Catalog Number
22 to 28V DC	70mA maximum	Screw Terminal	42DTB-5000
		3m 300V Cable	42DCB-5000

Allen-Bradley Spares